CITY OF LAGRANGE, GEORGIA

LANDFILL GAS PROJECT

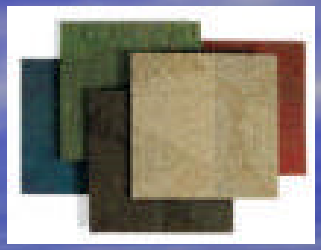
LMOP CONFERENCE

JANUARY 2005

CITY OF LAGRANGE

- 27,000 Citizens
- Full Service City
  - Electric
  - Natural Gas
  - Water/Sewer
  - Sanitation
  - Telecom
  - Traditional Public Services
- Annual Revenues of $71 million from Utility and $7 million from Sanitation Operations

INTERFACE CORPORATION



- Global manufacturer of carpet and fabrics for the commercial, institutional, and residential interior markets
- $900 million in annual sales
- “The vision is not just to change our company and eliminate our environmental footprint, but through the power of our influence on others to become restorative.” – Ray Anderson

MILLIKEN AND COMPANY

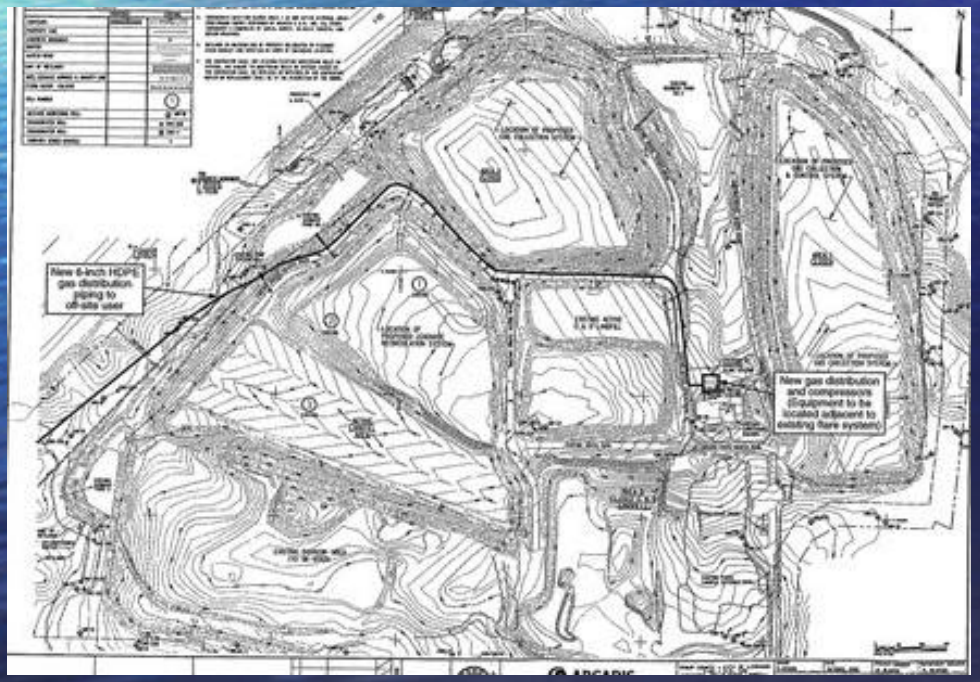
- One of the largest privately held textile and chemical manufacturers in the world
- 12,000 employees located in 60 facilities making 38,000 different products
- “Concern for the environment encompasses everything Milliken and Company does – from manufacturing to research to facility landscape.”

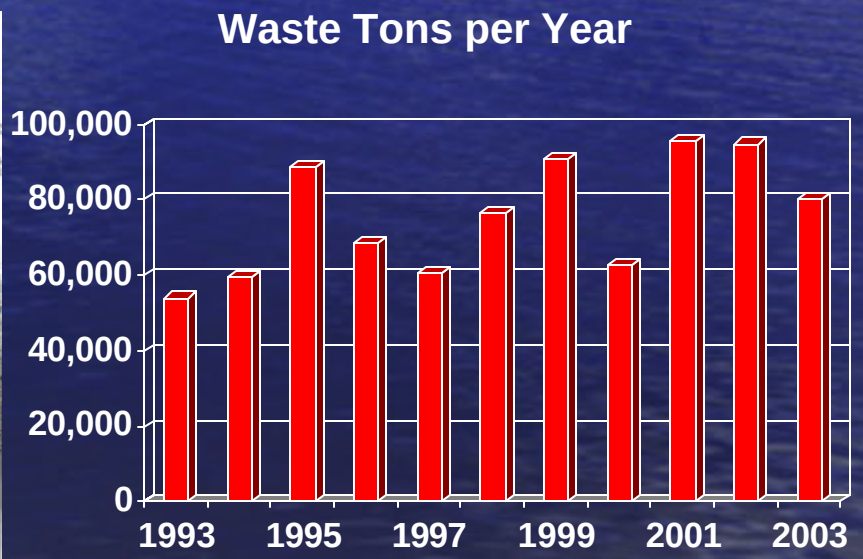
THE BEGINNNING

- In August 2001, Interface Flooring becomes one of 20 founding partners in USEPA Green Power Partnership
- Interface contacts the City of LaGrange and explains the need to purchase 2% of its power from “green” sources
- Simultaneously, the City was reviewing options to expand its landfill capacity

OUR LANDFILL

- 85.5 acres and 5.8 million cubic yards
- Areas 1 and 2 unlined, capped, and closed
- Subtitle D area contains 5 cells





STEP 1 – EVALUATE THE OPTIONS

- Option 1 – Electric Generation
  - $3.95 Million Investment
  - Gas System O&M $125,000/yr
  - Electric System O&M $65,700/yr (1 c/kwh)
  - 400 scfm gas flow → 750 Kw @ 5 c/kwh revenue
  - Potential for REPI credit of 1 c/kwh
  - Net Revenue = $134,300 w/29 year simple payback
- Option 2 – Inject Into Natural Gas Pipeline
  - Not viable due to CO_2 removal costs
  - Concern about other contaminants and liability
- Option 3 – Direct Use
  - $3.53 Million Investment
  - Gas System O&M $125,000/yr
  - Equipment O&M $8,000/yr
  - 400 scfm gas flow @ $0.80/therm revenue
  - Net Revenue = $707,960 w/ 5 year simple payback

ARCADIS

Gas to Energy Study performed in 2001

STEP 2 – VISIT TO JEA

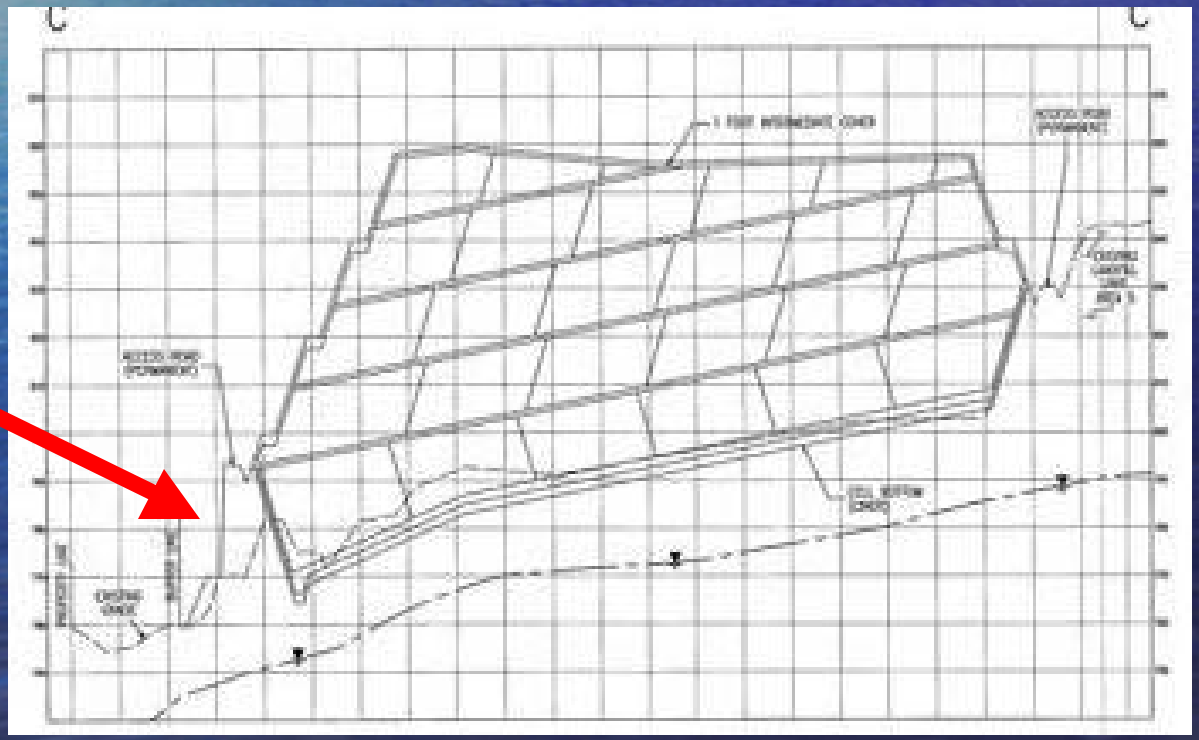
- Visit to JEA Landfill Gas Facility to collect information

STEP 3 – BIOREACTOR?

- Installation of a Bioreactor will yield more gas and increase landfill space up to 30%, but NSPS emission threshold may be exceeded.

STEP 4 – BUILD A WALL?

- Build a wall to allow for vertical expansion of the Subtitle D cells



STEP 5 – INFORMATION FROM WORLD RESOURCES INSTITUTE

- *Strategies for Building Industrial and Commercial Demand for Landfill Gas – 2002*

  - Benefits to Industry
    - Improved Corporate Environmental Profile
    - Emissions Credits
    - Lower Energy Costs
    - Lower Price Volatility

  - Landfills produce 35% of U.S. manmade CH_4 emissions

  - CH_4 has 21 times the global warming potential of CO_2

WORLD RESOURCES INSTITUTE

- "In most cases, the landfill gas sites with sufficient amounts of methane to support investments necessary to provide a beneficial reuse are regulated under the EPA's New Source Performance Standards, which mandate the installation and operation of methane collection systems. Methane collection at these sites is not voluntary and therefore not eligible for emissions credits related to the global warming potential for methane. However, a project that effectively displaces fossil fuel consumption with landfill gas may be able to claim a credit for the amount of emissions displaced by not using the fossil fuel."

- **"Direct use applications typically present a more competitive option for many industrial consumers…seventy percent of landfill gas projects in operation or under construction are direct use."**

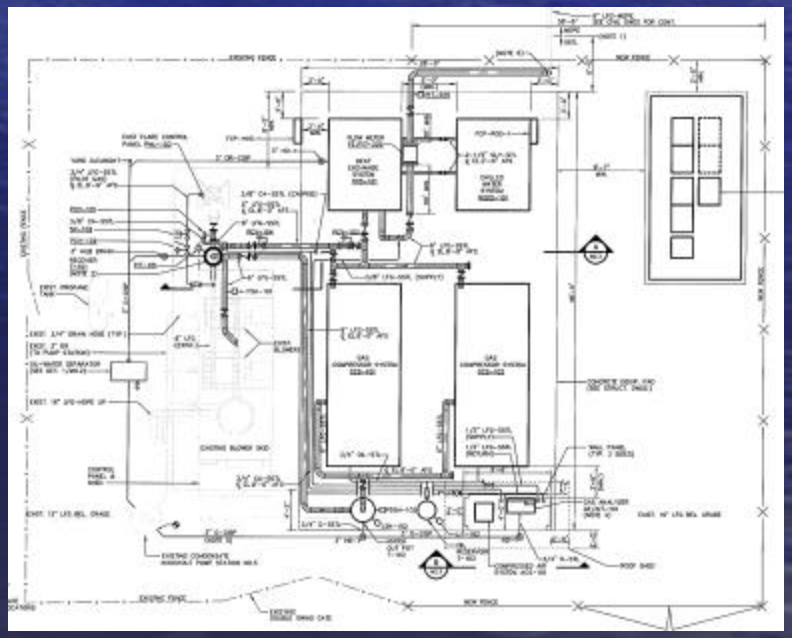
- "The industrial user must also manage the long-term uncertainty of variability of flow, Btu value, and impurities in the gas stream."

THE PROJECT

- A nonbinding Statement of Interest is mailed to potential industries in September 2002. Interface and Milliken respond positively.

- Gas Collection and Leachate Recirculation contract awarded to Comanco Environmental Corporation in October 2002 for $1.72 million.

- 10 year contracts signed with Milliken and Interface for 77,640 Dths per year of landfill gas under current rates with monthly index discounted by 30%
- Jordon, Jones, and Goulding is hired to design the landfill gas distribution system
- Contracts totaling $1.5 million are awarded for 600 cfm of conditioning equipment and eight miles of 6” PE pipeline
- Project NPV = $27 million ($1.3 million from gas sale)



INTERFACE HIGHLIGHTS THE PROJECT

"The magnitude of this project is such that it offsets the greenhouse gas emissions for all of Interface's North American carpet manufacturing facilities, making them all climate neutral." – John Wells, President Interface Flooring Systems

2003 Annual Report

CURRENT STATUS

- Gas Collection System and Bioreactor are in operation
- January 8, 2004 Tier 2 and Methane Sampling (must test every 5 years)
  - Cnmoc down from 347.5 to 290 ppmv as heptane
  - Nmoc emissions up slightly from 12.5 to 14.3 Mg
  - Still a non-NSPS site (<50 Mg)
- Pipeline is 50% completed and startup of the conditioning skid is expected in the Summer of 2005
- 2004 averaged 50% methane at 290 cfm. Landfill gas piping was recently expanded into Cell 3.